[Excerpt taken from Endangered Species Act - Section 7 Consultation and Magnuson-Stevens Act Essential Fish Habitat Consultation – Biological Opinion]

12.5 Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. In order to minimize the likelihood of incidental take associated with the interaction of channel deepening with BPA's ability to evaluate flow regimes, the Corps shall coordinate with BPA to provide information necessary for them to carry out Action Item 162 of the FCRPS Hydropower biological opinion (December, 2000).

2. In order to minimize the likelihood of incidental take associated with short-term (direct and indirect) impacts to listed salmonids during Project construction and maintenance activities, the Corps shall do the following:

    a. Minimize effects from entrainment through the following actions:

        i. Implement the dredging Impact Minimization Measures and Best Management Practices as identified in Chapter 3 of the 2001 BA.
        ii. Monitor operation of the dredge draghead and/or cutterhead to minimize the time they are removed from the substrate.

    b. Minimize effects from blasting through the following actions:

        i. The blasting plan, outlined on page 6-20 of the FEIS for the Project, will be developed in conjunction with Federal and State agencies and submitted to NMFS for approval 30 days prior to blasting. The blasting plan will include specific monitoring actions to determine if any listed fish are killed or injured, and include a clause that, if the blasting results in a take of listed salmonids, the Corps will discontinue blasting until such time as that take can be assessed and measures enacted to minimize impacts.
        ii. The results of the blasting plan monitoring shall be presented at the adaptive management team meeting during the year in which the blasting occurs.

    c. Prior to navigation channel construction and maintenance implementation, the Corps shall provide a "contractor compliance plan" to NMFS for review and approval. The plan must describe specific compliance monitoring actions, designed to minimize impacts to ESA-listed salmonids, that will occur during dredging and disposal actions, as described in 2001 BA table 7-4, 7-5, and 7-6. In addition, the contractor shall be required to report to the Corps any unanticipated

or unusual events or visual observations (e.g., water surface oil slicks, injured/dead fish, and/or unusual colored or smelling sediments) that are not required in the contractor compliance plan. If take of ESA-listed species is observed during compliance monitoring, the NMFS shall be contacted immediately to determine the need for Project modification, mitigation, or cessation.

3. In order to minimize the likelihood of incidental take associated with uncertainty and risk regarding long-term Project effects, the Corps shall implement a monitoring program with the following elements:

   a. The Corps shall finalize and implement the monitoring program (Table 7-3 of the 2001 BA). All activities related to scope identification, i.e., goals, milestones for completion, and check-in points, triggers for management change (management decision points that include specific metrics), and sampling/testing protocols to be developed, will be coordinated with NMFS. The final monitoring program shall also ensure that adequate pre-, during, and post- construction monitoring actions occur to allow for comparable pre- and post-Project data analysis.

   b. Two proposed monitoring actions, MA-1 and MA-3, shall be implemented over a longer time-scale (Term and Condition 5.a.1 of this Incidental Take Statement discusses Adaptive Management timeframes that link to long-term monitoring actions) than proposed in the 2001 BA. These monitoring activities are vital to understanding long-term Project-related changes to the Lower Columbia River, estuary and river mouth, and to allow for future adaptive management team decisions. Therefore, the Corps will continue, for the entire duration that the adaptive management program is operating, to collect and analyze data associated with MA-1 and MA-3 activities.

   c. Through monitoring measure MA-4, the Corps shall ascertain Project related changes in habitat. Additionally, the Corps shall compare results of this monitoring action to any similar research efforts by the Northwest Fisheries Science Center's (i.e., their Columbia River estuary study) or other organizations in the estuary for a more complete assessment of habitat changes. At the end of the proposed monitoring period, monitoring results from MA-4 and associated research/monitoring shall be reviewed by the adaptive management team. The adaptive management team will determine whether additional MA-4 actions or a sub-component of MA-4 will go forward into the future.

   d. In developing the above monitoring program information, the Corps will use the scope and sampling/testing protocols being implemented by the Northwest Fisheries Science Center in their on-going research activities in the Lower Columbia River and estuary as the basis for design. The final program will also describe how the various actions integrate together to form an ecosystem approach to evaluating ecosystem changes overtime.

i. Submit the final monitoring program design to NMFS by December 15, 2002, for approval.
ii. Implement the final monitoring program, as per the implementation dates.
iii. Ensure that development and implementation of the monitoring program is consistent with Action Items 158, 159, 161, and 163 of the FCRPS Hydropower biological opinion (December, 2000).

e. The Corps shall continue to work with NMFS and FWS on the revision of the DMEF manual to develop a set of contaminant testing protocols appropriate for marine and fresh water environments. Upon final completion of the revised DMEF manual, the monitoring program will be updated based on the new manual based on the contaminants portion of the monitoring program (see Table 7-3 of the 2001 BA, item MA-5). These changes may require additional changes to the monitoring program. Any changes are deemed necessary, will be submitted to NMFS for review and approval prior to their implementation. The Corps shall continue to support the work of the Regional Sediment Evaluation Team that is updating the DMEF manual.

f. The best available information indicates that the Columbia River navigation channel sediments do not exceed current DMEF or NMFS contaminants thresholds. The interagency contaminants review team, identified in MA-5, shall ensure that the Project continues to proceed with the best available sediment and contaminant information. The interagency contaminants review team shall meet annually to review sampling distribution and frequency, sediment quality, and contaminants concerns of all Lower Columbia River, estuary and river mouth sediment sample locations. The interagency contaminants review team shall provide the adaptive management team with annual, or more regular, updates on current sediment and contaminants information in the Project area. Additionally, the interagency contaminants review team shall recommend to the adaptive management team, beginning at the first adaptive management team meeting in January, 2003, any additional sampling or contaminants testing necessary for purposes of minimizing contaminants resuspension from Project dredging and/or disposal activities. The Corps shall complete additional sediment and contaminant samples determined necessary by the adaptive management team. Any samples that the adaptive management team determines are necessary as a result of the January, 2003, meeting shall be completed prior to Project construction.

g. The Corps shall host an ETM workshop to better understand and propose meaningful management actions to conserve the ETM. The ETM workshop will be conducted by December 15, 2005. The Corps will coordinate the following actions with NMFS in the development of this workshop, including:

i. Develop the scope of the meeting, agenda, and list of meeting attendees.

ii. Make information obtained through monitoring and research available for the workshop.
iii. Prepare a final report of the ETM workshop to be submitted to NMFS one month after completion of the workshop.
iv. Present the results of the ETM workshop (final report) to the adaptive management team.
v. Present management actions from the final ETM report to the adaptive management team for consideration in the adaptive management process.

h. The Corps shall minimize effects from stranding through the following actions:

i. Develop and implement a stranding study to be developed in conjunction with NMFS, FWS, the Ports, and appropriate State agencies. The stranding study will evaluate parameters that influence stranding. Potential factors include: Cross-sectional area, velocity, water level, bank configuration, location along river, slope of bank, ship traffic past site, and type, size, draft, and speed of vessel. To the extent appropriate, the Corps will integrate this study with efforts related to implementation of the September 15, 1999, biological opinion on the operation and maintenance dredging from John Day Dam to the Mouth of the Columbia.
ii. The scope of the stranding plan shall include an identified scope including goals, milestones for completion, check-in points, triggers for management change (i.e, management decision points that include specific metrics), and sampling/testing protocols to be developed in coordination with NMFS.
iii. The results of the standing plan shall be used to develop a plan to minimize and/or eliminate fish stranding. The stranding minimization plan, as it applies to ship traffic will be provided to the U.S. Coast Guard, for use in their regulation of river traffic, and to the adaptive management team for consideration during the adaptive management process.
iv. The stranding study design shall be submitted to NMFS by December 15, 2002, for approval.
v. The standing study shall be implemented by April 2003.
vi. The results of the stranding study, including management recommendations to minimize stranding, shall be presented at the adaptive management team meeting (January, 2004). Management recommendations shall be reviewed by the adaptive management team and implemented where feasible.
vii. The stranding study will be repeated two years following construction of the deeper channel.
viii. Post construction stranding studies will be evaluated by the adaptive management team.

i. In the event the Project will use ocean disposal at the Deep Water Site (see Section 3.2.8 of the 2001 BA), the management plan for this disposal site will be coordinated with NMFS.

i. NMFS will be notified of and invited to all Ocean Dredged Material Disposal Site Taskforce meetings.

4. The Corps shall implement an adaptive management process to review results of the monitoring program and other applicable new information and determine actions necessary to minimize any adverse Project effect:

a. Establish the adaptive management team that implements the adaptive management process. The adaptive management team will meet annually (or more frequently if new circumstances arise) to review scientific information collected through monitoring, research, or best management practices while implementing this action.

b. The adaptive management team shall assess Project effects, and evaluate the effectiveness of the compliance measures, the monitoring program, research, and ecosystem restoration features. In doing so, the adaptive management team will ensure that Project construction, operation and maintenance, and ecosystem restoration activities have no greater impacts than predicted in the 2001 BA or in this Opinion and Incidental Take Statement.

c. If an adverse effect is determined by the adaptive management team, the Corps shall, within 30 days, submit an impact minimization plan to NMFS for approval. The Corps plan could range from proposing mitigation actions, to modifying or stopping the Project if warranted.

d. The Corps will work cooperatively with NMFS and FWS to develop goals, stated purposes, operating principles, and composition of the adaptive management team. The Corps should review 65 FR 35242 for a Service overview of using adaptive management for certain listed species decision-making and permitting activities. Portions of this Service policy document may be pertinent to the Corps' final design of the adaptive management process for this Project. The framework for actions taken by the adaptive management team shall be based on the following:

i. Short-term (Years 0-5: Pre-construction, construction, and post-construction) - Focus shall be on potential short-term project impacts and modifications to minimize impacts. The effectiveness of the compliance measures, the monitoring program, research, and ecosystem restoration features will be evaluated. Additional mitigation features may be recommended for implementation and/or modifying or stopping the project if warranted.

ii. Mid-term (Years 5-10) - Conduct trend analyses with monitoring data and research actions to detect ecosystem changes over the longer term and apply to actions identified above; and

iii. Long-term (Years 10 and beyond) - Translate trend analysis information into long-term trends in ecosystem impacts and restoration of the ecosystem.

e. .Information gathered through monitoring and research actions will be used to annually assess Project effects to the following indicators[6]**:**

i. Shift in the location of the ETM,
ii. ETM functions,
iii. Accretion/erosion rates,
iv. Habitat types,
v. Food resources for salmonids,
vi. Changes to sideslope adjustments adjacent to the entire navigation channel and associated loss of shallow water/flats or tidal marsh and swamp habitats in riverine and estuarine areas.
vii. Physical features of habitat types, habitat opportunity, bathymetry, bedload changes, rate of suspended sediment transport, and water level changes to the estuary.
viii. Structure, distribution, net productivity, and detritus production of marshes and swamps,
ix. Velocity changes in shallow water habitats and available refugia, and
x. Salinity changes as they impact habitat types

f. The Corps shall submit the final design of the adaptive management process to NMFS by December 15, 2002 for approval.

g. The Corps shall conduct the first adaptive management team meeting in January, 2003. The adaptive management team will function for the duration of the monitoring program and prescribed ecosystem research actions. The Corps will provide facilitation support at all meetings of the adaptive management team.

h. The Corps shall ensure that development and implementation of the adaptive management process is consistent with Action Items 158, 159, 161, and 163 of the FCRPS Hydropower biological opinion (December, 2000).

5. In order to minimize the likelihood of incidental take through implementation of ecosystem restoration features (see Table 8-2 of the 2001 BA), the Corps shall:

[6]These are minimum effects to be examined based on the state of knowledge at the time this Opinion was issued. As additional effects are identified, or the existing list of effects is modified, this list will be changed to fit the contemporary needs to the monitoring program and adaptive management process.

a. Conduct all shallow water ecosystem restoration in-water construction activities, including excavation and dredge material placement, during approved in-water construction windows. The pipeline dredge in-water construction window for ecosystem restoration projects in the Lower Columbia River and estuary is November 1 to February 28. Hopper dredge disposal in deep water temporary storage sump locations, does not have an in-water construction window. The in-water construction window for Columbia River tidegate retrofit projects is July 1 to September 15.

b. To the extent practicable, maintain dredge draghead and/or cutterhead at or below the substrate surface during ecosystem restoration construction activities that require dredging activities.

c. To minimize the effects to ESA-listed salmonids and prey items during the Lois Island restoration activity, the Corps will submit a plan to outline how dredge material will be staged to constuct this feature, including measures to minimize resuspension of contaminants from the temporary storage sump.

d. Tide gate retrofits:

   i. The Corps shall enter into an agreement with the Project sponsors that will require the sponsors to ensure future maintenance of retrofitted tidegates. In addition, the Corps will require guarantees from the Project sponsors that volitional fish passage, via timely operation of the tidegate passage features, will occur during key salmonid migration periods. The Corps will coordinate fish design for tidegate retrofits with Service fish passage engineers.

   ii. The Corps shall coordinate fish passage designs for tidegate retrofits with NMFS fish passage engineers.

e. The Corps shall coordinate with NMFS on the development and implementation of the Purple Loosestrife Integrated Pest Management Plan, including prior NMFS review and approval for all over-water use of Rodeo®.

f. The Corps shall coordinate with NMFS on the development and implementation of pre- and post- monitoring protocols for the ecosystem restoration features to gauge their effectiveness in restoring the type, function, and value habitats identified in the 2001 BA. The Corps' restoration features monitoring plans shall be submitted to NMFS for review and approval by December 15, 2002.

6. The Corps shall provide NMFS with annual reports starting one year after the date of this Opinion regarding Project compliance, monitoring, restoration, and research activities. The report shall also summarize annual implementation of reasonable and prudent measures and their implementing terms and conditions:

a. Compliance:

i. The Corps will submit a series of reports based on the dredging Impact Minimization Measures and Best Management Practices for compliance (i.e., construction and maintenance) actions to NMFS in six month intervals during the construction process. These reports shall include the following minimum elements: a description of how the Corps implemented and responded to the impact minimization measures and BMPs, how much material was dredged and disposed of, how many fish were taken due to blasting, were any unusual sediments encountered and how were these events addressed, how effective were the BMPs in minimizing impacts from Project construction, and how the Corps addressed any adverse compliance monitoring finding.

ii. The Corps must record daily operations while dredging to ensure all BMPs are followed. In order to complete this task, the Corps will develop a standard tracking table for workers of the dredging vessels. The results of the tracking information will be included in summary form and as an appendix to the construction and maintenance annual reports (see Integrated Annual Report requirement, below).

b. Monitoring Activities:

i. An annual monitoring report will be completed for each monitoring action (MA-1 to MA-6). The following shall be included in the monitoring report for each monitoring action: (1) Overview of monitoring action; (2) monitoring data and results; (3) description of adverse impacts to ESA-listed salmonids and/or their habitats that were determined to be related to Project activities; and (4) recommendations to be reviewed by adaptive management team.

c. Ecosystem Restoration Features:

i. Upon completion of each restoration feature, the Corps will submit an monitoring report to NMFS. The report will include:

(1) Detailed discussion of monitoring results.
(2) Photographic documentation of environmental conditions at the project site before, during, and after project completion.
(3) Photographs will include general project location views and close-ups showing details of the project area and project, including pre and post construction.
(4) Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.
(5) Recommendations on methods to improve site-specific restoration activities.

d. Ecosystem Research Actions:

i. An annual research progress report, and a final report, shall be completed for each research action. Each final report shall clearly define research objectives, and report on research findings. Recommendations for additional research, or discussion of management implications, also shall be provided.

e. Integrated Annual Report:

i. The Corps shall provide an annual progress report that documents the Corps progress implementing all reasonable and prudent measures and their implementing terms and conditions. As appropriate, based on the Integrated Annual Report, NMFS will determine whether reinitiation of consultation is indicated.

If a dead, injured, or sick endangered or threatened species specimen is located during Project dredging, disposal, monitoring, research, or restoration activities, initial notification must be made to the National Marine Fisheries Service Law Enforcement Office, at the Vancouver Field Office, 600 Maritime, Suite 130, Vancouver, Washington 98661; phone: 360.418.4246.

Care should be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered and threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not disturbed.

[Excerpt taken from Endangered Species Act - Section 7 Consultation]
Biological and Conference Opinions
for the
Columbia River Channel Improvements Project

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

8.5.1 Coastal Cutthroat Trout and Bull Trout Terms and Conditions

In order to minimize the likelihood of incidental take to coastal cutthroat trout and bull trout associated with short-term (direct and indirect) impacts during Project construction and maintenance activities, the Corps shall do the following:

a. Minimize effects from entrainment through the following actions:

a.1 Implement the dredging Impact Minimization Measures and Best Management Practices as identified in Chapter 3 of the aquatic species BA.

a.2 Monitor operation of the dredge draghead and/or cutterhead to minimize the time they are removed from the substrate.

b. Minimize effects from blasting through the following actions:

b.1 The blasting plan, outlined on page 6-20 of the FEIS for the Project, will be developed in conjunction with federal and state agencies and submitted to the Service for approval 30 days prior to blasting. The blasting plan will include specific monitoring actions to determine if any listed fish were killed or injured, and include a clause that, if the blasting results in a take of coastal cutthroat trout or bull trout, the Corps will discontinue blasting until such time as that take can be assessed and measures enacted to minimize impacts.

b.2 The results of the blasting plan monitoring shall be presented at the adaptive management team meeting during the year in which the blasting occurs.

c. Prior to navigation channel construction and maintenance implementation, provide "contractor compliance plan" to the Service for review and approval. The plan must describe specific compliance monitoring actions, designed to minimize impacts to coastal cutthroat trout and bull trout, that will occur during dredging and disposal actions, as described in the aquatic species BA table 7-4, 7-5, and 7-

6. In addition, the contractor shall be required to report to the Corps any unanticipated or unusual events or visual observations (e.g., water surface oil slicks, injured/dead fish, and/or unusual colored or smelling sediments) that are not required in the contractor compliance plan. If take of coastal cutthroat trout and bull trout is observed during compliance monitoring, the Service shall be contacted immediately to determine the need for Project modification, compensation, or cessation of the project.

In order to minimize the likelihood of incidental take to coastal cutthroat trout and bull trout that is associated with uncertainty and risk from long-term Project effects, the Corps shall implement a monitoring program:

a. Finalize and implement the Monitoring Program (Table 7-3 of the aquatic species BA). All activities related to scope identification, i.e., goals, milestones for completion, and check-in points, Triggers for Management Change (management decision points that include specific metrics), and sampling/testing protocols to be developed, will be coordinated with the Service. The final monitoring program shall also ensure that adequate pre-, during, and post- construction monitoring actions occur to allow for comparable pre- and post-Project data analysis.

Two proposed monitoring actions, MA-1 and MA-3, shall be implemented over a longer time-scale (Term and Condition 4.a.1 of this Incidental Take Statement discusses Adaptive Management timeframes that link to long-term monitoring actions) than proposed in the aquatic species BA. These monitoring activities are vital to understanding long-term Project-related changes to the lower Columbia River, estuary, and river mouth, and to allow for future adaptive management team decisions. Therefore, the Corps will continue, for the entire duration that the adaptive management program is operating, to collect and analyze data associated with MA-1 and MA-3 activities.

Monitoring action MA-4 shall ascertain Project related changes in habitat. Additionally, the Corps shall compare results of this monitoring action to any similar research efforts by the Northwest Fisheries Science Center's (i.e., their Columbia River estuary study) or other organizations in the estuary for a more complete assessment of habitat changes. At the end of the proposed monitoring period, monitoring results from MA-4 and associated research/monitoring shall be reviewed by the adaptive management team. The adaptive management team will determine whether additional MA-4 or a sub-component of MA-4 will go forward into the future.

a.1 Submit the Final Monitoring Program design to the Service by December 15, 2002, for approval.

a.2 Implement the Final Monitoring Program, as per the implementation dates.

b. Continue to work with the Service on the revision of the DMEF manual to develop a set of contaminant testing protocols appropriate for marine and fresh

water environments. Upon final completion of the revised DMEF manual, the Project's MA-5 Monitoring Program action will be updated to reflect any new protocols or effects thresholds. Any changes to MA-5 that are deemed necessary, due to DMEF revisions, will be submitted to the Service for review and approval prior to their Project-related implementation. The Corps shall continue to support the work of the Regional Sediment Evaluation Team that is updating the DMEF manual.

The best available information indicates that the Columbia River navigation channel sediments do not exceed current DMEF or NMFS contaminants thresholds. The interagency contaminants review team, identified in MA-5, shall ensure that the Project continues to proceed with the best available sediment and contaminant information. The interagency contaminants review team shall meet annually to review sampling distribution and frequency, sediment quality, and contaminants concerns of all lower Columbia River and estuary sediment sample locations. The interagency contaminants review team shall provide the Adaptive Management Team with annual, or more regular, updates on current sediment and contaminants information in the Project area. Additionally, the interagency contaminants review team shall recommend to the Adaptive Management Team, beginning at the first Adaptive Management Team meeting in January, 2003, any additional sampling or contaminants testing necessary for purposes of minimizing contaminants resuspension from Project dredging and/or disposal activities. The Corps shall complete additional sediment and contaminant samples determined necessary by the Adaptive Management Team. Any samples that the Adaptive Management Team determines are necessary as a result of the January, 2003 meeting shall be completed prior to Project construction.

d. The Corps will host an ETM workshop to better understand and propose meaningful management actions to conserve the ETM. The ETM workshop will be conducted by December 15, 2005. The Corps will coordinate the following actions with the Service in the development of this workshop, including:

- Developing the scope of the meeting, agenda, and list of meeting attendees.
- Any information obtained through monitoring and research should be made available for the workshop
- Prepare a final report of the ETM workshop to be submitted to the Service one month after completion of the workshop for Service approval.
- Results from the final ETM report will include, as appropriate, management actions that will be presented to the adaptive management team for consideration in the Adaptive Management Process.

Minimize effects from stranding through the following actions:

e.1 Develop and implement a stranding study to be developed in conjunction with NMFS, Service, the Ports, and appropriate state agencies. The stranding study will evaluate parameters that influence stranding.

Potential factors include: cross-sectional area, velocity, water level, bank configuration, location along river, slope of bank, ship traffic past site, and type, size, draft, and speed of vessel. The stranding study design shall be submitted to the Service by December 15, 2002, for approval. The standing study shall be implemented by April 2003.

e.2 The stranding plan shall include an identified scope including goals, milestones for completion, check-in points, triggers for management change (i.e, management decision points that include specific metrics), and sampling/testing protocols to be developed in coordination with the Service.

e.3 The results of the standing plan shall be used to develop a plan to minimize and/or eliminate fish stranding. The stranding minimization plan, as it applies to ship traffic, will be provided to the U.S. Coast Guard, for use in their regulation of river traffic, and to the adaptive management team for consideration during the Adaptive Management Process.

e.4 The stranding study will be repeated two years following construction of the deeper channel.

The Corps shall implement an Adaptive Management Process to review results of the monitoring program and other applicable new information, and determine actions necessary to minimize any adverse effects to coastal cutthroat trout and bull trout:

a. Establish the adaptive management team that implements the Adaptive Management Process. The adaptive management team will review scientific information collected through monitoring, research, or best management practices while implementing this action. The adaptive management team shall meet annually, or more frequently if new circumstances arise.

The adaptive management team shall determine Project effects, and evaluate the effectiveness of the compliance measures, the monitoring program, research, and ecosystem restoration features. In doing so, the adaptive management team will ensure that Project construction, operation and maintenance, and ecosystem restoration activities have no greater impacts than predicted in the aquatic species BA or in these Service opinions and Incidental Take Statement.

a.2 If an adverse effect is determined by the adaptive management team, the Corps shall, within 30 days, submit an impact minimization plan to the Service for approval. The Corps plan could range from proposing mitigation actions, to modifying or stopping the Project if warranted.

The Corps, NMFS, and the Service will develop goals, stated purposes, operating principles, and composition of the adaptive management team. The Corps should review 65 FR 35242 for a Service overview of using adaptive management for certain listed species decision-making and permitting activities. Portions of this Service policy document may be pertinent to the Corps' final design of the Adaptive Management Process for this Project. The framework for actions taken by the adaptive management team shall be based on the following:

b.1 Short-term (Years 0-5: Pre-construction, construction, and post-construction) - Focus shall be on potential short-term project impacts and modifications to minimize impacts. The effectiveness of the compliance measures, the monitoring program, research, and ecosystem restoration features will be evaluated. Additional mitigation features may be recommended for implementation and/or modifying or stopping the project if warranted.

b.2 Mid-term (Years 5-10) - Conduct trend analyses with monitoring data and research actions to detect ecosystem changes over the longer term and apply to actions identified above; and

b.3 Long-term (Years 10 and beyond) - Translate trend analysis information into long-term trends in ecosystem impacts and restoration of the ecosystem.

c. Information gathered through monitoring and research actions will be used to annually assess Project effects to the following indicators[1]:

- Shift in the location of the ETM,
- ETM functions,
- Accretion/erosion rates,
- Habitat types,
- Food resources for salmonids,
- Changes to sideslope adjustments adjacent to the entire navigation channel and associated loss of shallow water/flats or tidal marsh/swamp habitats in riverine and estuarine areas.
- Physical features of habitat types, habitat opportunity, bathymetry, bedload changes, rate of suspended sediment transport, and water level changes to the estuary.
- Structure, distribution, net productivity, and detritus production of marshes and swamps,

[1]These are minimum effects to be examined based on the state of knowledge at the time these Service opinions were issued. As additional effects are identified, or the existing list of effects is modified, this list will be changed to fit the contemporary needs to the Monitoring Program and Adaptive Management Process.

- Velocity changes in shallow water habitats and available refugia, and
- Salinity changes as they impact habitat types

d. Submit the proposed design of the Adaptive Management Process to the Service by December 15, 2002 for approval.

e. Conduct the first Adaptive Management Team meeting in January, 2003.

The adaptive management team will function for the duration of the Monitoring Program and prescribed ecosystem research actions.

The Corps will provide facilitation support at all meetings of the Adaptive Management Team.

In order to minimize the likelihood of incidental take through implementation of Ecosystem Restoration Actions (see Table 8-2 of the aquatic species BA), the Corps shall:

Conduct all shallow water ecosystem restoration in-water construction activities, including excavation and dredge material placement, during the in-water construction window. The in-water construction window is the time period when fewest coastal cutthroat trout and bull trout occur in the Project area, thereby minimizing potential for incidental take. The pipeline dredge in-water construction window for Miller/Pillar and Lois Island embayment projects is November 1 to February 28. Hopper dredge disposal in deep water, temporary storage sump locations does not have an in-water construction window. The in-water construction window for Columbia River tidegate retrofit projects is July 1 to September 15.

The Corps will submit a plan that describes how dredge material will be staged in temporary sumps during Lois Island embayment and Millar/Pillar restoration actions, and how resuspension of contaminants from temporary storage sump will be minimized.

To the extent possible, the Corps shall maintain dredge draghead and/or cutterhead at or below the substrate surface during ecosystem restoration construction activities that require dredging activities.

d. The Corps shall enter into an agreement with the Project sponsors that will require the sponsors to ensure future maintenance of retrofitted tidegates. In addition, the Corps will require guarantees from the Project sponsors that volitional fish passage, via timely operation of the tide gate passage features, will occur during key salmonid migration periods. The Corps will coordinate fish design for tidegate retrofits with Service fish passage engineers.

The Corps shall coordinate with the Service on the Integrated Pest Management Plan for the Purple Loosestrife Control Program, including Service review and approval for all over-water use of RODEO.

The Corps shall coordinate with the Service on the development and implementation of pre- and post- construction monitoring protocols for the Ecosystem Restoration Actions to gauge their effectiveness in restoring the type, function, and value habitats identified in the aquatic species BA. The Corps' restoration features monitoring plans shall be submitted to the Service for review and approval by December 15, 2002.

The Corps shall provide the Service with annual reports from Project compliance, monitoring, restoration, and research activities, and summarize annual compliance with this Incidental Take Statement's reasonable and prudent measures and their implementing terms and conditions:

g. Compliance:

The Corps will submit a series of reports based on the dredging Impact Minimization Measures and Best Management Practices for compliance (i.e., construction and maintenance) actions to the Service in six month intervals during the navigation channel construction process. These reports will consist of the following minimum elements: how the Corps implemented and responded to the Impact Minimization Measures and BMPs, how much material was dredged and disposed of, how many fish were take due to blasting and entrainment, were any unusual sediments encountered and how were these events addressed, how effective were the BMPs in minimizing impacts from Project construction, and how did the Corps addressed any adverse compliance monitoring finding.

a.2 The Corps must record daily operations while dredging to ensure all BMPs are followed. In order to complete this task, the Corps will develop a standard tracking table for workers of the dredging vessels. The results of the tracking information will be included in summary form and as an appendix to the construction and maintenance annual reports (see Integrated Annual Report requirement, below).

b. Monitoring Activities:

b.1 An annual monitoring report will be completed for each monitoring action (MA-1 to MA-6). The following shall be included in the monitoring report for each monitoring action: 1) Overview of monitoring action; 2) monitoring data and results; 3) Any adverse impacts to coastal cutthroat trout or bull trout and/or their habitats that were determined to be related to Project activities; 4) Recommendations to be reviewed by the Adaptive Management Team.

c. Ecosystem Restoration Actions:

c.1 Upon completion of each restoration action, the Corps will submit an monitoring report to the Service. The report will include:

- Detailed discussion of monitoring results.
- Photographic documentation of environmental conditions at the project site before, during, and after project completion.
- Photographs will include general project location views and close-ups showing details of the project area and project, including pre and post construction.
- Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.
- Recommendations on methods to improve site-specific restoration activities.

Ecosystem Research Actions:

d.1 An annual research progress report, and a final report, shall be completed for each research action. Each final report shall clearly define research objectives, and report on research findings. Recommendations for additional research, or discussion of management implications, also shall be provided.

a. Integrated Annual Report:

e.1 The Corps shall provide an annual progress report toward implementing all reasonable and prudent measures, and their implementing terms and conditions. As appropriate, based on the Integrated Annual Report, the Service will determine whether reinitiation of consultation is indicated.

8.5.2 Bald Eagle Terms and Conditions

The terrestrial species Opinion's Incidental Take Statement indicated:

1. Avoid dredging areas where fine-grained materials (silts and clays) are present. If avoidance is not feasible, determine grain size and conduct chemical analysis in accordance with the Corps' Tier I, IA, and IIB sampling process (DMEF 1998). A suitable *in vitro* assay for dioxin-like compounds can be used in lieu of a full dioxin and fran analytical scan, but detection limits shall approach 1 pg/g. Fine materials containing the organochlorine compounds DDT or its metabolites, PCBs, dioxins, or furans above

Tier II screening limits outlined in the DMEF (1998), will either not be dredged or will be placed in approved upland sites or in the ocean.

Continue monitoring annual productivity for all lower Columbia River bald eagles for five-years following initiation of the project. Reduction of annual productivity below 0.50 young per occupied nest site with a known outcome for bald eagle pairs below river mile 60 should be reported immediately to the Service. Project operations should then be re-evaluated to determine the extent to which dredging is influencing bald eagle productivity.

Develop a Service-approved plan to monitor concentrations of organochlorine contaminants (DDE, PCBs, and dioxin-like compounds) in lower Columbia River bald eagle eggs within three-years of channel deepening initiation. DDE and PCBs have declined in this population over the last 10 years, and concentrations in eggs should not significantly increase during the dredging operation from the last egg sampling period in 1994 and 1995.

The Corps shall develop and implement a Service-approved monitoring plan to determine if contaminants are released or made available during the dredging operation and inwater disposal. The Corps may involve the Regional Management Team, the Oregon Department of Environmental Quality, and the U.S. Geological Survey, and other interested parties, in the development of this plan. If contaminant availability is found to be enhanced by dredging and/or disposal, then the Corps shall implement a Service-approved, phased-approach contaminant sampling plan in the lower estuary to determine: 1) if fine-grained materials are deposited or increase in the lower estuary (near the turbidity maximum) as a result of dredging operations for channel deepening; 2) if organochlorine contaminants are associated with any increases in fine-grained materials in the area as a result of dredging operations; 3) if contaminants associated with the fine-grained materials are available or are transferred to benthic or epibenthic organisms in the area; and, 4) if contaminants associated with the dredging operation are transferred to higher trophic levels. A suitable weight-of-evidence approach shall be used determine the association between deposition of fine-grained materials and the channel deepening. Negative results in an earlier phase of the monitoring plan would likely negate implementation of the later phases.

The following is an additional bald eagle term and condition:

Submit annual monitoring reports, required in bald eagle terms and conditions 2, 3, and 4, above, to the Adaptive Management Team for annual review and adaptive management decisions.

8.5.3 Columbian White-tailed Deer Terms and Conditions

The terrestrial species Opinion's Incidental Take Statement indicated:

Place dredged materials on the site incrementally, as described in the biological assessment.

Monitor designated Columbian white-tailed deer site, as described in the biological assessment, to determine habitat suitability on an annual basis for 10 years. A report will be provided to the Service by December 31 of the year following initiation of the proposed placement of dredged material at W44.0, containing:

1. the habitat types observed;
2. the amount and proportion of habitat available and fully suitable for Columbian white-tailed deer foraging and cover;
3. numbers of Columbian white-tailed deer observed and estimated to use the mitigation sites; and
4. proposed remediation if habitat is not fully suitable for foraging and cover.

3. Reports will be provided annually for three years, then every five years, starting with the fifth year after initiation, throughout the duration of the proposed project.

The following are additional Columbian white-tailed deer terms and conditions:

The Corps will design the Tenasillahe Island tidegates to ensure that Columbian white-tailed deer habitat will not be flooded during daily tidal or high water events. The Corps shall use careful hydraulic engineering analysis and subsequent tidegate design, and provide proper instruction to Service staff regarding tidegate operation.

Submit annual monitoring reports, required in Columbian white-tailed deer terms and conditions 2 and 3, above, to the Adaptive Management Team for annual review and adaptive management decisions.